

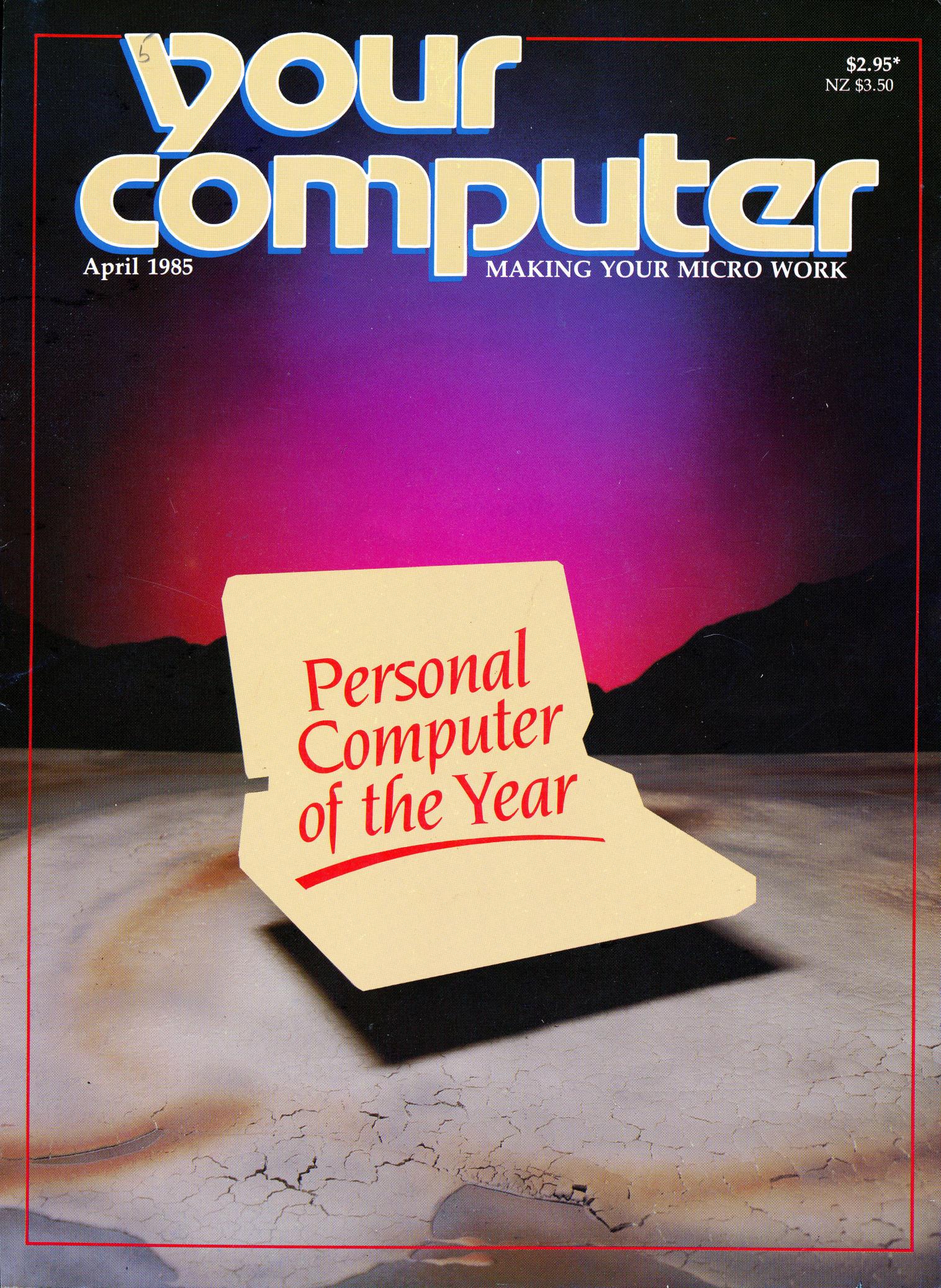
your computer

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April 1985

MAKING YOUR MICRO WORK

Personal
Computer
of the Year



A LOT OF LEARNING IS A VERY GOOD THING. ESPECIALLY IF IT'S FREE!



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EVERY JOHN
SANDS SEGA
SC3000H!

MORE THAN A BRILLIANT COMPUTER. A COMPLETE EDUCATION COURSE IS PART OF YOUR PURCHASE.

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The more you get to know your Sega, the more it will do for you.

THE SUCCESS STORY OF PERSONAL COMPUTERS.

Irrespective of anything else in its price field, just look what your John Sands Sega SC3000H has to offer:

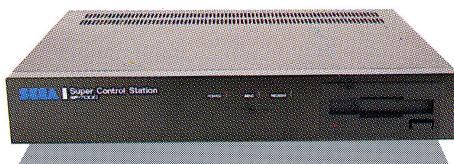
- Typewriter style hard keyboard.
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- Expandable to 80K total RAM.

At your fingertips you've got high level BASIC language, high resolution graphics, 32 graphic sprites, multi-function keyboard, full screen editing, 48 single-keystroke commands, 16 colors and a 3 channel 1/5 octave sound range. Connects to your television set and standard cassette recorder. It's the best in its class of home computers for the whole family.

ADD THE SUPER CONTROL STATION FOR TREMENDOUS POWER AND PERFORMANCE.

The John Sands Sega SF7000 Super Control Station offers you all these features - and lots more!

- 3 inch micro disk drive.
- 156K bytes working capacity.



- 312K bytes storage capacity.
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I'm interested in knowing more. Please send me complete literature and copies of reviews on the John Sands Sega Total Technology Home Computer System.

My name _____

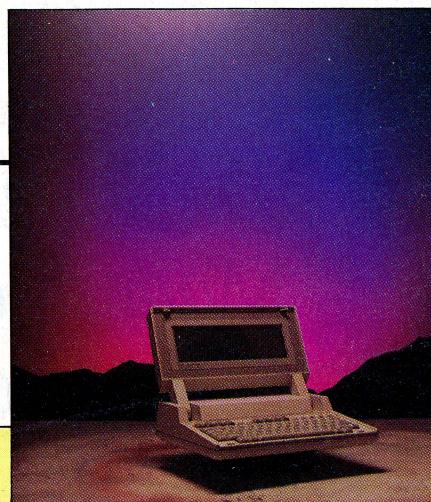
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Please mail to: Computer Information Department, John Sands Electronics, 6 Bay Street, Port Melbourne, Victoria 3207. (Telephone (03) 645 3333)

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EDITOR
Natalie Filatoff**CONSULTING EDITOR**
Les Bell**ASSISTANT EDITOR**
Evan McHugh**NEWS EDITOR**
Rose Vines**ART & DESIGN**
Ali White**ART PRODUCTION**
Sharon Hill, Brian Jones**ADVERTISING PRODUCTION**
Danny Hooper**MANAGING EDITOR**
Matt Whelan**PUBLISHER**
Michael Hannan**CONTRIBUTORS**

Australia: Brendan Akhurst, Bill Bolton, David Brudenall, Geoff Cohen, Andrew Farrell, Frank Lee, Peter Lynden, Bruce Mitchell, John Nicholls, Jeff Richards, Rod Stevenson.

United States: Howard Karten

The UK: Martin Hayman

OFFICE SERVICES

Elizabeth Barnett

SUBSCRIPTION ENQUIRIES

Julie Plummer

ADVERTISING

Damien Prins, Andrea Beaty
(NSW Advertising)
David Farrington
(Victorian Advertising)

OFFICES**NSW**

140 Joynton Ave, Waterloo 2017.
(02) 663-9999
Telex: FEDPUB AA74488

Victoria

150 Lonsdale St, Melbourne 3000.
(03) 662-1222
Telex: FEDPUB AA34340

Western Australia

Ian Greenacre, Gordon & Gotch Adv't,
134-144 Parry St, Perth 6000.
(09) 328-8044

Queensland

Craig Santilla, Media Services,
4 Adelaide Terrace, Brisbane 4000.
(07) 229-6033

South Australia

Steve Birbeck, Admedia Group,
24 Kensington Rd, Rose Park 5067.
(08) 332-8144

New Zealand

Chris Horsley, 4A Symonds Court,
Symonds St, Auckland, NZ.
Telex: TEXTURE 260753

Source Mail: Les Bell TCY314;
Matt Whelan TCY267.

Bulletin Board: (02) 662-1686—Les
Bell 1085, Matt Whelan 1, or leave a
message in comments.

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The Computer Magazine of the Year

how, no matter whether you're interested in games, utilities, or business applications.

To that end, the sections of the magazine dealing with different areas will be more clearly defined. The magazine will generally be bigger, brighter, more friendly and informative. There'll be more pocket programs — every month — to keep your computer well fed, and interesting features will keep you well read. We'll have more tutorials, and more product surveys and buyers guides. That's not the end of our plans, either — but we're not giving away all our secrets yet ...

One thing you can hardly miss in this issue is the annual Personal Computer Of The Year Awards. This year, they're even bigger and better, with some particularly interesting peripheral products making it to the list for the first time.

Altogether, there are twenty-three different products on the shortlist for the Awards — we didn't quite realise what we were taking on in evaluating that many computers and software packages! Read through our evaluations and see if you agree with the award panel.

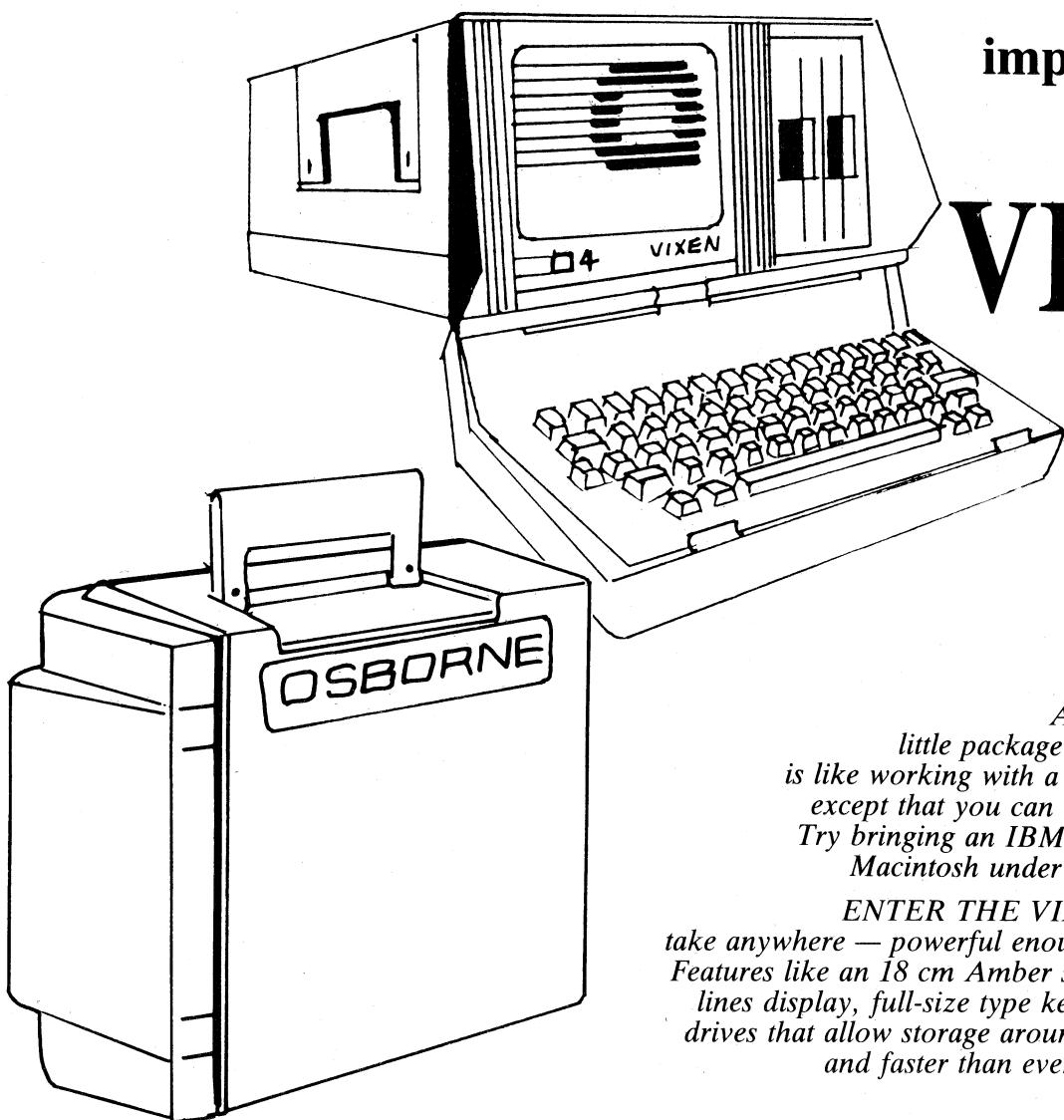
LES BELL

Cover photo: Wayne Holloway, Exposure Increase.

Imitations . . .

they may be a sincere form of flattery —
but 2nd best isn't really what you want.

The company who first introduced the portable micro
has done the
impossible again



VIXEN™

All you need in one neat little package. Working with VIXEN is like working with a much bigger computer, except that you can take VIXEN anywhere. Try bringing an IBM-PC home, or putting a Macintosh under your seat on the plane.

ENTER THE VIXEN! Small enough to take anywhere — powerful enough to do the job right. Features like an 18 cm Amber screen, 80 column x 24 lines display, full-size type keyboard, 2 x 400K disk drives that allow storage around 200 type pages/disk, and faster than ever before response time.

And the VIXEN comes with FREE productivity software for business, Wordstar III Word Processing, Electronic spreadsheets, SuperCalc 2, Graphics, and a host of tools for custom programming & games.

So — if you liked computers before —
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IN JUST ONE HOUR YOUR PC CAN GO MANY PLACES FOR YOU... AND GATHER A WORLD OF INFORMATION.



All because of the extraordinary DataNetComm PC In/Modem... Australia's only SMARTMODEM.

INTRODUCING AUSTRALIA'S FIRST SMARTMODEM.

DataNetComm, leaders in the field of MicroComputer Communications products, have designed and manufactured the first 'Smart' modem in Australia. This is welcome news to users of IBM PC, PC XT, and PC Portable personal computers, because now you can easily access so many more networking systems and communications packages.

For example, now for the first time, IBM PC communications packages like CROSSTALK and RELAY, or multi-function packages like SYMPHONY or OPEN ACCESS will work properly in Australia. And indeed any other US software that uses the HAYES protocol. It all works automatically, without you having to make any adjustments.

FULLY AUTOMATIC.

The DataNetComm PC In/Modem, or to give it its full description, Asynchronous and Videotex Internal SMARTMODEM for IBM PC, gives you Auto Dialling, Auto Answer, Auto Disconnect, as well as redialling, switchboard timing, online/offline switching and Automatic speed selection. Via any telephone network your IBM personal computer can connect to most remote computers to allow you to make data base enquiries or pass information between you and

your head office computer, or indeed to another micro user like yourself. Any time, day or night. Even to a remote unattended PC. You simply start your program and it makes the call for you.

THE ONLY AUSTRALIAN SMARTMODEM APPROVED BY TELECOM.

The DataNetComm PC In/Modem is the first and only internally mounted "Smart" modem with HAYES compatibility to have been approved by Telecom.

We have the advantage of producing the first Australian designed and manufactured modem of its kind, and it is compatible with both Australian (CCITT) and US (Bell) standards, and automatically selects 300 baud or 1200 baud speeds. (You must have approved devices to connect to the Telecom phone network).

SO "SMART" IT'S WON RECOGNITION.

DataNetComm launched the PC In/Modem only late last year, (Nov '84), and already it has been a great success. We are particularly pleased that it has been judged a Finalist in the 'Best Australian Hardware Award' Section of YOUR COMPUTER 1985. And to quote the Jan./Feb. issue of Australian PC/World, "it looks set to become a landmark PC peripheral, with a number of claims to fame".

VIDEOTEX, ALL PART OF THE PACKAGE.

With DataNetComm you're not just buying a technologically advanced piece of hardware, you get a software system too. The inclusive Videotex software means you can directly access VIATEL, BULLETIN, AFTEL, ANZTEL and ELDERS IXL; and of course

through VIATEL, you can access up-to-the-minute news, stock market information, horse racing odds, travel guides, telesoftware, games, business information, travel information, and through teleshopping, make bookings and other orders. You can even send a telex for \$1.75 or send electronic mail to another VIATEL user.

HOW TO GATHER A WORLD OF INFORMATION.

One of the great advantages of the DataNetComm PC In/Modem is that it is **multifunctional**. That means as well as using it to network with other PCs and Mainframes, and as well as Videotex, it links CSIRONET, DOW JONES, THE SOURCE, AUSINET, MINERVA, GEISCO, and OTC's MIDAS, plus more, at either slow or high speed.

You can receive data at 120 c.p.s. via the telephone network, internationally wherever ISD systems operate; but if you travel in the States or phone direct to the US, it will change modes to connect to the US (Bell standard) modems.

ALL YOU NEED.

If you have the following equipment then you could be in business with the DataNetComm PC In/Modem tomorrow: An IBM PC, PC XT, PC Portable (128K or above) with monitor; PC-DOS, MS-DOS or CP/M; a standard voice grade Telecom telephone line; the PC communications package of your choice.

The modem is only 13.5cm long allowing insertion behind the PC XT disk drive.

\$848 is the recommended retail price of the DataNetComm PC In/Modem, including tax. With the hardware is included an Asynchronous RS232 Interface. You also get full documentation and operational manual, and the Videotex software.

AND YOU DIDN'T EVEN HAVE TO PICK UP THE PHONE!

Communications has really come of age now that the DataNetComm PC In/Modem has made it easy, automatic, accessible and inexpensive to operate.

Free Trial Offer

Get your FREE diskette with full operation information on the PC In/Modem and the full range of DataNetComm MicroComputer communications products. Offer expires May 31.

TO: NetComm (Aust.) Pty Ltd, PO Box 284, Pymble 2073 NSW.

YES I want to find out more about the DataNetComm PC In/Modem and how it will improve my networking communication facility. Rush me the FREE DataNetComm diskette immediately.

I have an IBM PC, PC XT, PC Portable

MY NAME _____

ADDRESS _____

POSTCODE _____

PHONE _____

MY COMPANY NAME, CONSULTANCY, OR SERVICE _____

DataNetComm
Australia's network to the world.

DBASE COMPILER SETS A CLIPPING PACE

When dBase III first reared its head it offered many improvements on its ultra-popular predecessor, dBase II. However, there were some areas in which the new product was a disappointment – notably speed, and that its use was restricted to IBM PCs and close compatibles. A dBase compiler has just been released which promises to ease these and other restrictions.

A US COMPANY, Nantucket Corporation, has been the first on the market with a compiler for dBase III. Called Clipper, the compiler should make life a lot easier for software developers who use dBase.

Clipper's first claim to fame is it produces programs which will run between "two and 20 times as fast" as normal dBase III applications. That's a fair range to play with, and obviously the speed improvement will depend on the type of application you're developing. It'll be interesting to see what sort of application will achieve the maximum speed improvement boasted.

The Compatibility Question

Although Clipper is currently available only on the IBM PC and close compatibles, dBase programs compiled using Clipper will run on *any* MS-DOS machine (it generates a machine language .EXE file which runs from the DOS prompt), including the NEC APC III.

It seems particularly twisted that Clipper itself will run on almost any MS-DOS machine. It is the copy protection system used – Softguard – which restricts the compiler's use to IBM PCs and cronies. This is what has happened with dBase III as well: the Prolok system used to protect it from being copied also stops it from being used on

a wide range of machines. What a price to pay for protection from piracy!

Nantucket isn't too happy with this situation. The company is on the lookout for an alternative copy protection scheme which won't restrict the use of the product, so it's possible the situation will improve in the near future.

More Files, More Variables

Clipper offers a variety of other improvements over dBase III. You may have 250 files open at any time (compared with dBase III's 15) and there is allowance for 64,000 memory variables and fields. A vast improvement.

All typical dBase III program commands are supported, including macros. There is also support for the use of macros in DO WHILE loops, something Ashton-Tate warns against in dBase. Linkage to separately compiled or assembled programs in any language is possible through the CALL command.

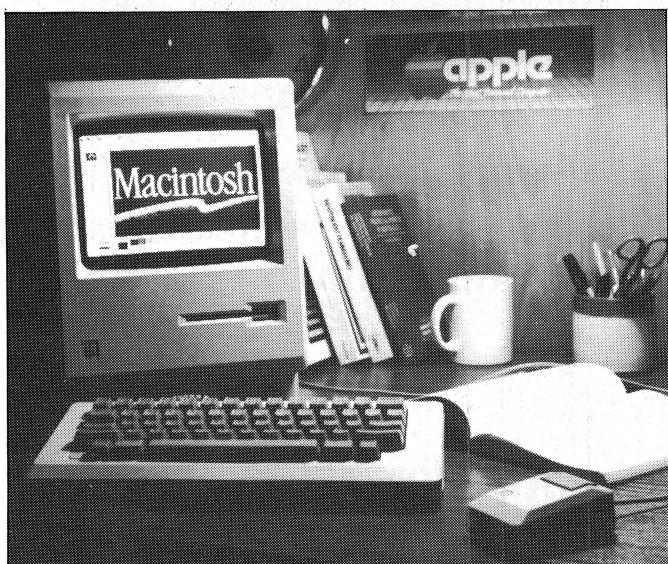
Nantucket also claims Clipper reduces program size; the .EXE files produced are half the size of the original dBase .PRG command files plus an average of 64 Kbytes. Whether this means a 2 Kbyte .PRG file will convert to a 65 Kbyte .EXE file is unclear. But if you're producing programs over 128 Kbytes in length you should get some benefit.

Prolok Comes Unstuck

Version 1.1 of dBase III has also been released. You won't find any changes in the program itself to make it worth dashing out and buying. The main difference between this and the original version is the copy protection system used. Ashton-Tate has abandoned Prolok and is now using Softguard.

Prolok has been the object of considerable criticism, as it requires the master disk to be in the disk drive whenever a Proloked program is fired up. This procedure seems to tempt fate a little too much for most people's liking, with the chance of destroying your master disk ever-present. Softguard works by taking the contents from your master disk and transferring them to the hard disk. It'll be interesting to see if it's any more palatable than Prolok.

Arcom Pacific is the distributor for Clipper and dBase III in Australia. Clipper retails for \$999. Contact Arcom for more details: 252 Abbotsford Road, Mayne, 4006; (07) 52 9522. □



FATMACS ON CAMPUS

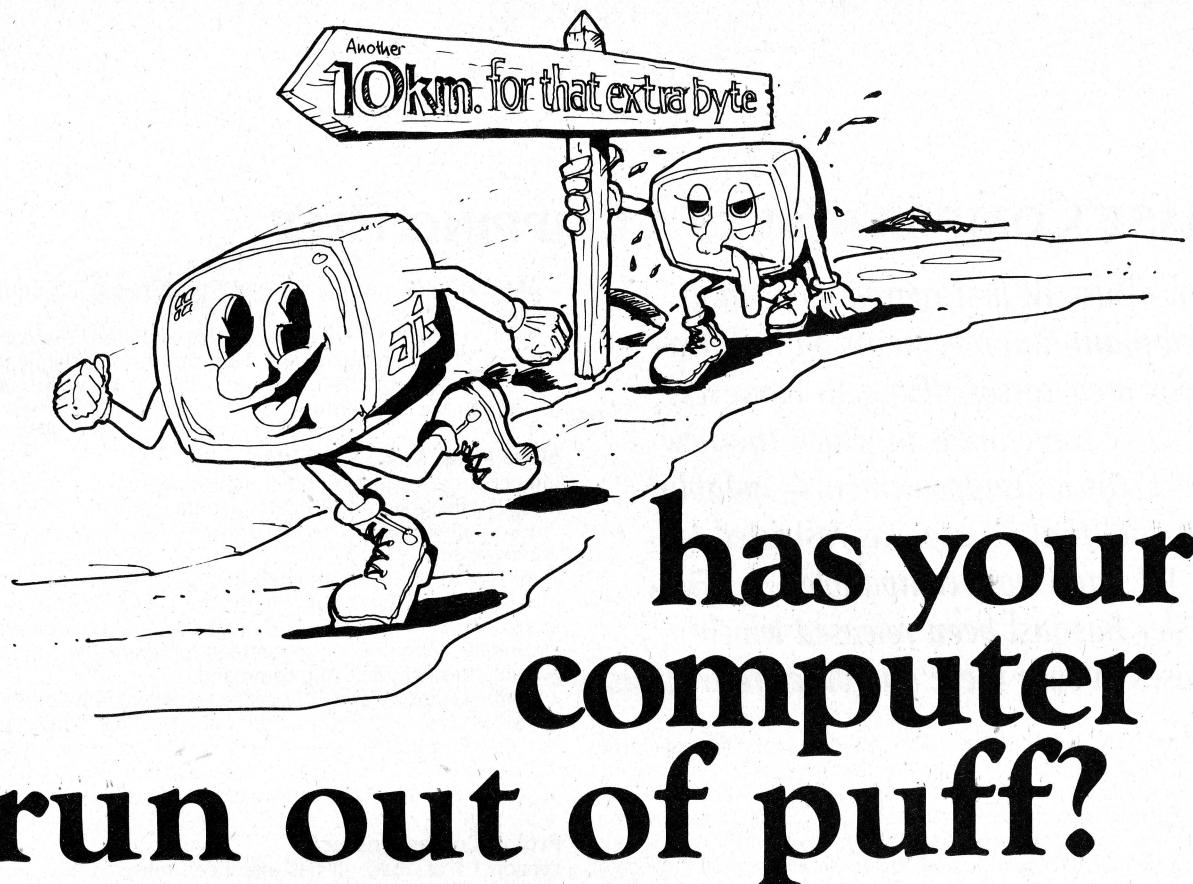
The Computer Science Department of the University of Western Australia has taken delivery of 40 Macintosh computers (all 'Fat-Macs', with 512 Kbyte RAMs) for use in its first year Computer Science Laboratory. Coupled with the four machines the university bought in 1984, this makes it the largest Macintosh lab in Australia.

Previously, students were using terminals connected to a PDP11/Cyber combination, which allowed interactive editing of programs, but forced them to be run in batch mode. With the Macs, students will get a scheduled two hours per week at the computer.

Professor Jeff Rohl, of UWA's

Computer Science Department, is enthusiastic about the Macs. "The Macintosh Pascal is pure magic: it automatically indents a program as it is entered; it puts keywords in bold face; and it highlights any invalid construct. It is an interpreter which can run a program step by step, can be interrupted at any time, and allows break points ... Macs are without doubt the way of the future."

Although students and staff have absolute priority on the machines, the department intends to make them available to the public during the evenings, weekends and vacations under a Community Computing Program to be announced shortly. □



has your computer run out of puff?

Sooner or later most micro computers run out of puff.

The Labtam 3003 Desktop computer was specifically designed with more **puff** in mind. The Labtam 3003 has a standard configuration which includes:

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- Z80A @ 5 MHZ
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- 800 K Bytes 5 1/4" Floppy Disk Drive
- Concurrent CPM Operating System running both 8 and 16 Bit Software

If you're looking to update your **puffless** system and retain your investment in current software and hardware then contact Labtam.

Labtam is Australia's largest manufacturer's of commercial computer systems. Currently in excess of 360 installation sites in Australia. Exported to 9 overseas countries.



"LABTAM 3003 DESKTOP COMPUTER FINALIST IN THE COMPUTER OF THE YEAR AWARD."

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SYNERGISTIC BEER DRINKING

Synergistic beer drinking? Yes indeed. The staff of *Your Computer* has decided to introduce a custom Les Bell made popular when he was editor of *Electronics Today International*. From May 1 we will be retiring after work to the Clock Hotel, Surry Hills, Sydney, every first Wednesday of the month. We invite you, our readers, to join us for discussion, debate, sharing of ideas and a drink or two. In this way we hope to get feedback about how you think the magazine is going, what are the good

and bad features, and what you'd like to see in the future. It'll also give us a chance to share information and swap ideas.

The gatherings will be entirely informal – if you feel like coming along, just turn up at the Clock (470 Crown Street, Surry Hills) at 6 pm or so on May 1 or any first Wednesday of the month after that. You should be able to recognise us by the magazines on the table and our general air of fanaticism and wisdom.

□

RURAL COMPUTER SHOWS

A series of exhibitions of computer hardware (and some software) will tour New South Wales country centres from July to August this year. The 30 exhibitors will include Apple, Olivetti, Sanyo, Wang, IBM and AWA.

The exhibition will give country people a rare chance to have face-to-face contact with manufacturers and suppliers. The organisers, Country Computer Exhibitions, hope to attract interest from local government, education, chambers of commerce, service clubs and the rural sector.

Dates and venues for the tour are: Albury-Wodonga, June 7-9, Wodonga Stadium; Wagga, June

14-16, Mt Austin High School auditorium; Griffith, June 21-23, Woodside Hall, Showground; Parkes, June 28-30, Police Boys' Club; Orange, July 5-7, Ex-Serviceman's Club; Dubbo, July 12-14 (venue to be advised); Tamworth, July 19-21, Tamworth Town Hall; Port Macquarie, July 26-28, Port Macquarie High School auditorium; Coffs Harbour, August 2-4, Coffs Harbour Town Hall; Lismore, August 9-11, Churchill Centre.

If you'd like more information about the exhibitions, contact: Hartley Henderson, (02) 797 6646 or (02) 516 5866.

□

PC-SLAVE RELEASED TWICE

In February, two companies released a new enhancement for the IBM PC, XT and compatibles, which offers a cheap and efficient multi-user capability. PC-Slave lets you add 31 additional terminals to a single PC.

The PC-Slave card contains its own 8 MHz 8088 processor (almost twice as fast as the IBM processor), 256 Kbytes of RAM and two serial ports. Because each slave terminal has its own processor there is no system degradation; in fact, the slave terminals work faster than an IBM PC host.

Software for the system is the Real-Time Network Executive (RTNX), which handles selective and total file locking, record locking, sharing of all peripherals, spooling, remote execution of programs and simple electronic mail facilities.

In the US, Alloy Computer

Products has distribution rights for PC-Slave on the East Coast, while Advanced Digital Corporation has the West Coast rights. In Australia, Alloy and Archives are both distributing it in the same geographical market. Archives believes its expertise in multi-user systems will enable it to fully support the PC-Slave. For Alloy, PC-Slave will extend the range of peripherals offered by the company; Alloy will also be selling complete systems, including the PC host.

Both companies are retailing the Slave for \$2995, including tax. The price tag includes a slave terminal and keyboard, Slave card, connecting cable and the RTNX software. For details, contact: Alloy – (03) 51 5278 or Archives – (02) 922 3188. Both companies have offices in other states.

□

LAN CONFERENCE FOR CANBERRA

The Canberra branch of the Australian Computer Society is holding a conference on local area networks on May 1 and 2. LANCON '85 will focus on users' experiences in the acquisition and use of LANs, progress in the implementation of Levels 2 and 3 of the ISO OSI (International Standards Organisation Open Systems Interconnect) hierarchy, and the interplay between LANs and third-generation PABX.

The main speaker at the conference will be Mr Mike Roberts, the managing director of Australian manufacturers Time Office Computers. Other speakers will include users from both the government and private sectors.

Registration fees are \$120 for ACS members, \$150 for non-members and \$70 for ACS student members. For more information, phone (062) 88 8048.

□

SCHOOL LIBRARY AUTOMATION CONFERENCE

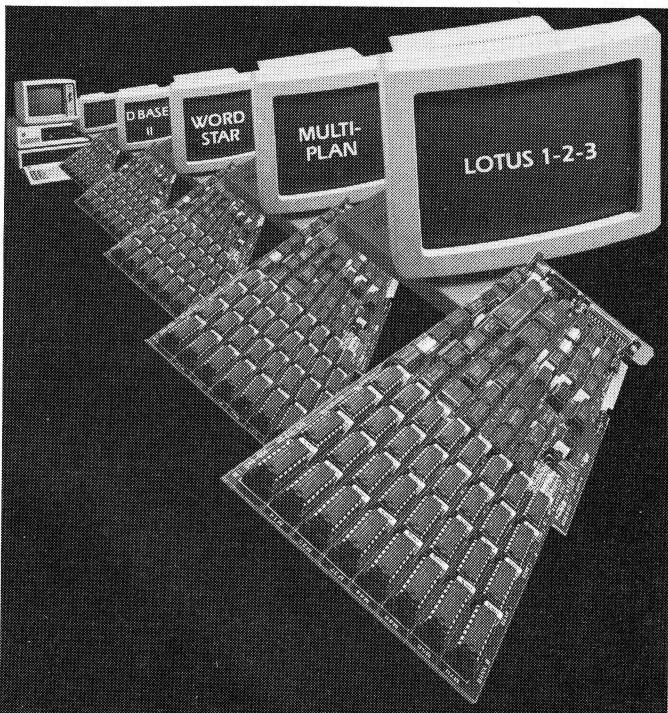
The Department of Library Studies at the Western Australian College of Advanced Education is holding a two-day conference on 'School Library Automation' in Perth on April 12 and 13.

Speakers will discuss computer applications in school libraries, local school library computing projects in progress, ASCIS (Australian Schools Catalogue Information Service), selecting computer software, computer hardware considerations, management of computer resources and likely future developments in school library computing.

Selected computer hardware and software vendors will be demonstrating their ranges of educational and library management products during the conference, and there will also be a display of computer-related books and other materials.

The venue for the conference will be the Nedlands Campus of the WA CAE. Further information may be obtained from: Dr Anne Clyde, Head, Library Studies Department, WA College of Advanced Education, Cnr Stirling Highway and Hampden Road, Nedlands, 6009; (09) 386 0222.

□



What makes Macintosh tick. And talk.

The brain of the Apple Macintosh uses a blindingly fast 32-bit MC68000 microprocessor. Far more powerful than the 16-bit 8088 found in current generation computers.

The 16-bit 8088 microprocessor.



Macintosh's 32-bit MC68000 microprocessor.



The heart is a revolutionary technology of windows, icons, pull-down menus and mouse-commands.

Which makes the 32-bit power not only more useful but easier to learn.

Another miracle of miniaturisation is Macintosh's built-in 90mm (3½") microfloppy disk drive. Its 90mm disks store more than conventional 135mm (5¼") floppies - 400K. So while they



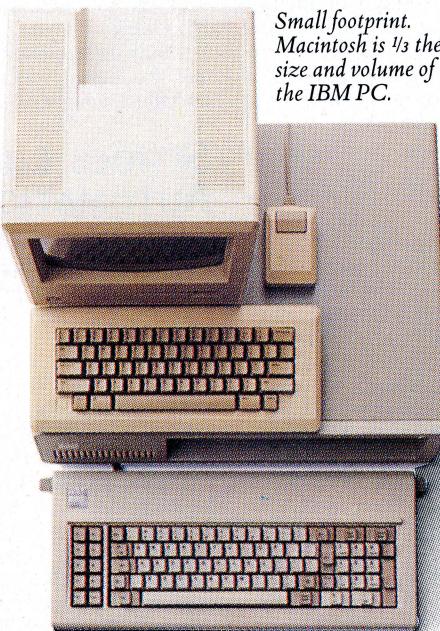
Standard 135mm (5¼") floppy disk.



Macintosh's 400K 90mm (3½") disk.

are big enough to hold a desk-full of work, they are small enough to fit in a shirt pocket.

And, thanks to its size, if you can't bring the problem to a Macintosh, you can always bring



a Macintosh to the problem. (Macintosh actually weighs less than 9 kilos.

And speaking of talking, Macintosh has a built-in polyphonic sound generator capable of producing high-quality speech or music.

All it takes to get it talking is special Macintosh speech generating software.

On the back of the machine, you'll find built-in high speed RS232 and RS422 AppleTalk/serial communication ports. Which means you can connect printers, modems and other peripherals without adding \$250 cards.

It also means that Macintosh is ready to hook into a local area network. (With the AppleTalk Personal Network, you'll be able to connect up to 32 computers and peripherals.)

Should you wish to double Macintosh's storage with an external disk drive, you can do so without paying extra for a disk-controller card - that connector is built-in, too.

And, of course, there's a built-in connector for Macintosh's mouse, a feature that can cost up to \$500 on computers that can't even run mouse-controlled software.

Of course, the real genius of Macintosh isn't its serial ports or its polyphonic sound generator.

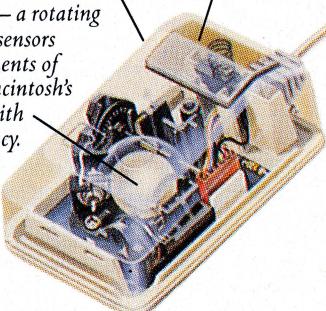
The real genius is that you don't have to be a genius to use Macintosh.

You just have to be smart enough to buy one.

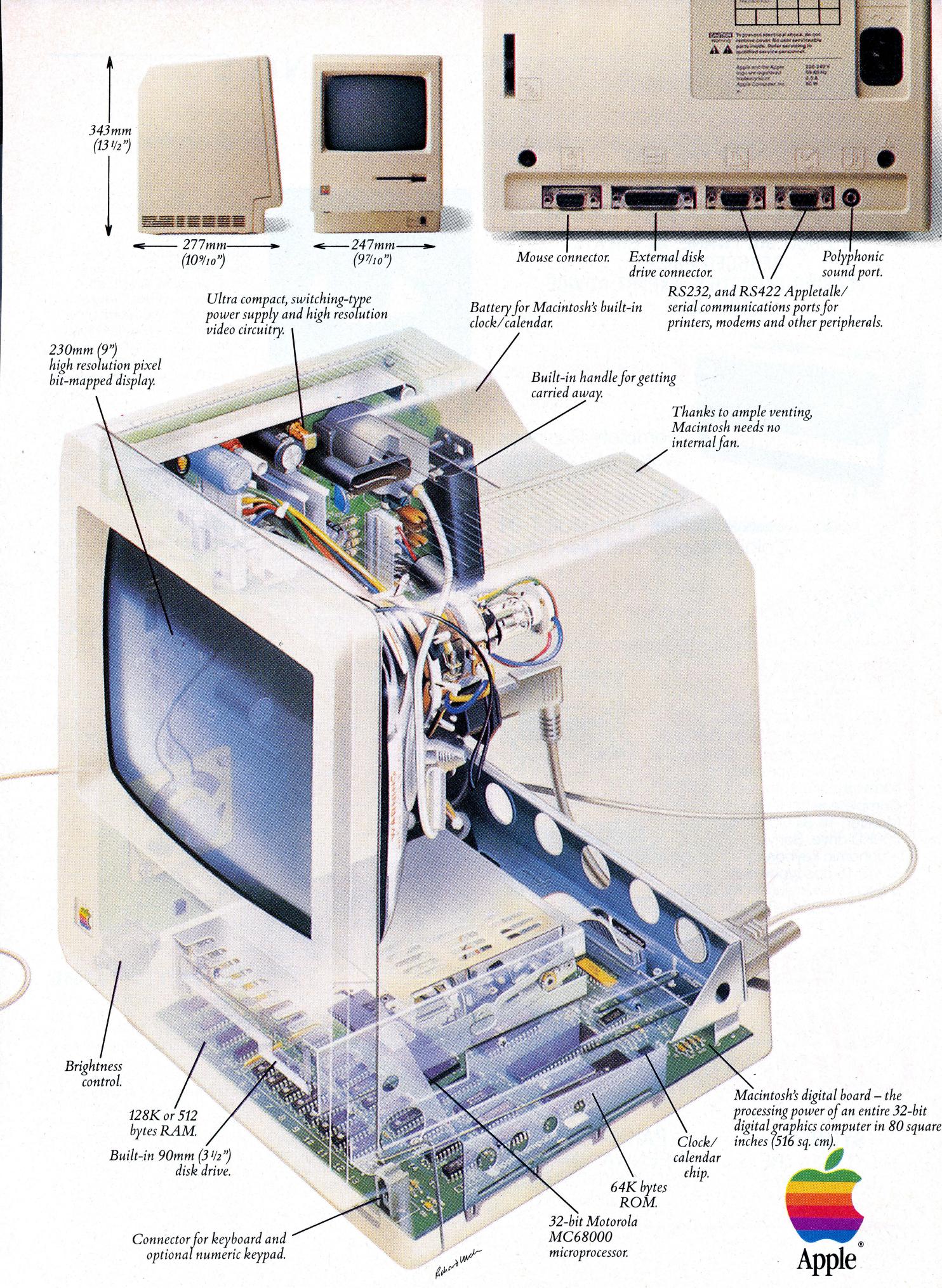
Some mice have two buttons. Macintosh has one. So it's impossible to push the wrong button.

The Mouse itself.
Replaces typed-in commands with a form of communication you already understand - pointing.

The inside story - a rotating ball and optical sensors translate movements of the mouse to Macintosh's screen pointer with pin-point accuracy.

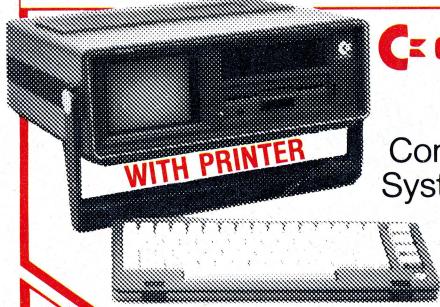


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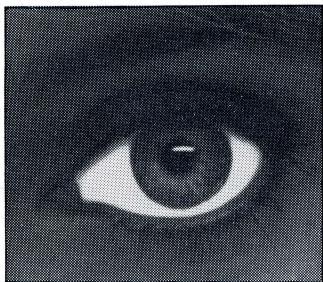
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NEWS



1984 ARRIVES A LITTLE LATE

"Read any good minds lately?" So runs the advertising for Human Edge's latest and cutest offering, 'Mind Prober'. Mind Prober will 'let you read people like a book and discover things about them that most people wouldn't dream of telling you.'

Described as an 'expert system', Mind Prober leads you through a series of assessment questions about your victim (sorry, "user's counterpart") and develops a printed report telling you how that person copes with stress and behaves in relationships, their attitudes towards work and sex, and their personal interests.

Human Edge claims this personality profile is "so accurate, it's frightening". The publicity continues: "You'll know what makes your subject tick. And that's a tremendous advantage in figuring out how to get what you want from someone ... pick up a Mind Prober today and get a piece of someone's mind".

If this sounds appealing, you can buy Mind Prober for \$49.95 (for the Commodore 64) or \$69.95 (for the IBM PC, Apple II and Macintosh). It might just tell you more about yourself than your 'subjects'. Contact Human Edge for more details: 63 Stead Street, South Melbourne 3205, or phone (03) 690 5014. □

SPERRY MOVES INTO QLD SCHOOLS

Sperry, a major supplier of mainframes to the Queensland Government, has won a Department of Education contract to supply personal computers to Queensland schools.

The tender is part of a \$7.5

million project by the state government to install computers in all Queensland secondary schools over the next three years. All the machines will be used in the classroom in a computer literacy program which will cover keyboard skills, database, spreadsheet and word processing applications, and elementary technical computations.

The first 1400 computers will be installed over the next few months. Schools will be supplied with networks of between five and 30 micros, depending on the school's size and operation. The computers are 16-bit MSDOS machines, and Queensland software company Arcom Pacific will be supplying a number of well-known commercial software packages to run on the machines. Sperry will also be supplying a printer sharing device, the Lipton T-Switch, manufactured by Gold Coast firm Lipton and Whyte. □

SHARE THE LOAD

Computermax is distributing a low-cost intelligent switching device from SciSys. The Serial Printshare lets a number of terminals or computers share facilities, or provides flexibility for a single computer needing more than one serial peripheral.

The Printshare has a built-in 64 Kbyte buffer, which decreases or eliminates time spent in waiting for the printer to be free, and a copy facility for automatically producing multiple copies of documents. It is supplied with necessary cabling and retails for \$499 (including tax). Computermax can be contacted at 539 Pittwater Road, Brookvale 2100; (02) 93 1383.

BOB'S THE NAME

In our review of 'The Australian Guide to Lotus 1-2-3' (Your Computer, January 1985) we gave credit for authorship to Owen Bishop.

It's not true; our apologies to Bob Thompson, who wrote the book. The price quoted for the Guide and diskette — \$24.95 — was a special introductory offer which is now out-of-date. The current price is \$29.95, and you can get a copy from Bob's company: Computer Tutor, 17 Mountview Ave, Parkdale 3195; (03) 580 3480. □

IBM IN THE CLEARINGHOUSE

The Royal Melbourne Institute of Technology has announced that IBM will display products at its Australian Microcomputer Industry Clearinghouse (AMIC).

AMIC started operations in 1984, providing information and independent advice to users and buyers interested in a range of local and overseas microcomputers. People can test and evaluate all the hardware and software on display. AMIC also conducts demonstrations and provides consultations and training courses. □

COMPUTER-AIDED CIRCUIT DESIGN

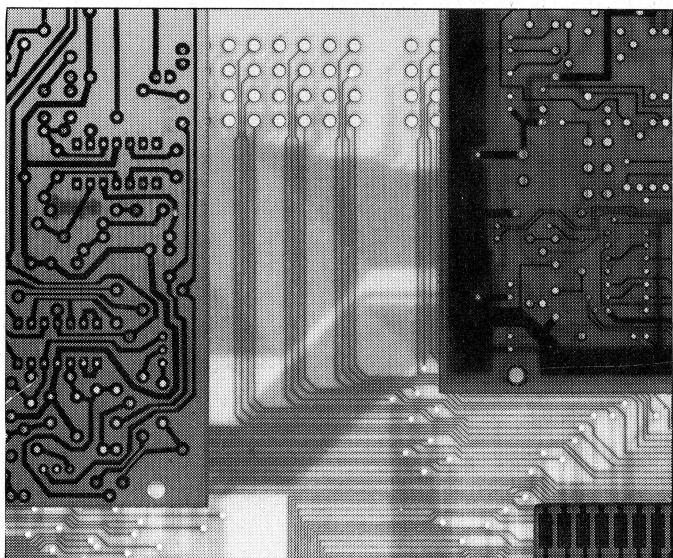
An Auckland company, New Technology Ltd, has become the agency for Analyser, a linear circuit analysis program for the BBC model B microcomputer (and soon available on other computers).

The program was originally written for internal use by Number One Systems, an English consultancy specialising mainly in solving analogue and interface design problems. The staff's enthusiasm for the program led it to offer it for general use.

The Analyser is designed to simulate resistors, capacitors, inductors, transformers, bi-polar and field-effect transistors and operational amplifiers, in any combination. The circuit may be analysed in terms of input impedance, output impedance, gain and phase. Circuits of 16 nodes and 60 components can be analysed.

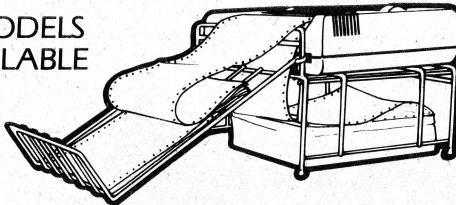
Using the system it is possible to alter information and parameters and judge the results without the risk of blowing everything up or spending an inordinate amount of time breadboarding. Modifications can be made to the circuit configuration and component values as required and the analysis re-run, enabling the designer to quickly assess the circuit sensitivity to component tolerances, temperature and other effects.

The program is supplied on cassette and costs NZ\$125 or A\$75 (including postage and packaging). It's available from: New Technology Ltd, PO Box 5066, Wellesley St, Auckland. □



Paper Tamer PRINTER STANDS

2 MODELS
AVAILABLE



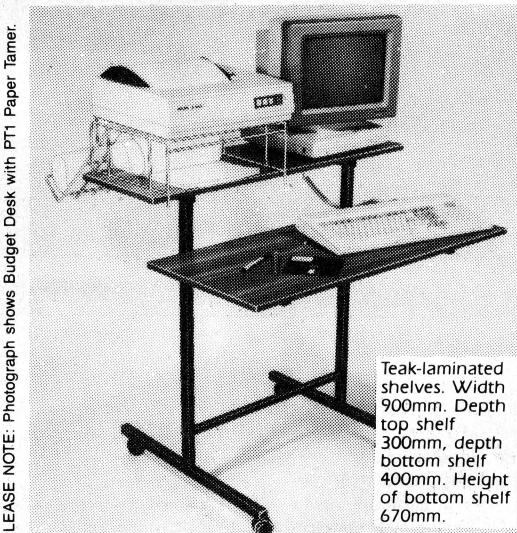
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DEALER ENQUIRIES WELCOME

BRIEFLY



- PC-Paintbrush lets you do things on your IBM others do on their Macintosh. Based on an icon menu, you can use this program (in conjunction with a hardware colour card) to draw free-form graphics with a mouse or joystick. It costs \$199 and you can get more details from: Sourceware, 4/73 Albert Avenue, Chatswood, 2067; (02) 411 5711.
- Learn Morse code on your Microbee. Morse Course from High-Tech Tasmania comes on cassette and costs \$18.50 including postage. For more information or to order, contact: High-Tech Tasmania, 39 Pilenger Drive, Fern Tree, 7101.
- If you're an owner of an Excalibur 64 you may not be aware there is an active users' group in existence for persons of your ilk. The Excalibur 64 Users' Group recently combined with the Sorcerer and CP/M group. Contacts for the group are: Victoria (03) 386 2350; WA (09) 895 2895. ▷

- Industry sources believe the IBM Wangaratta plant will ramp up production to around 30,000 by the end of 1985. This will represent about \$95 million in sales for the company - about one-sixth of the projected Group annual turnover.
- The Arbitration Commission has endorsed an agreement for wide-ranging studies to be conducted by the Public Service on eye testing and visual display unit radiation. The agreement also asks the National Health and Safety Commission to examine urgently the standards and arrangements which should apply to testing of radiation emission, especially in relation to potential birth deformities and miscarriages.
- IBM Australia has awarded its Personal Computer Dealer of the Year award to B.S. Microcomp of Melbourne. The award is made on the basis of sales performance, customer satisfaction judged on independent surveys, and participation in IBM-sponsored dealer activities.
- The University of NSW will broadcast a two-part course on FORTRAN 77, starting on April 17. It's a beginner's course which requires no programming experience and no maths beyond School Certificate level. Each lecture will be broadcast in the Sydney area at 7 pm on Wednesdays and again at 8 pm on Fridays over the University's radio station, 2UV. Course fees are \$25 per part. For more information: (02) 697 3175.
- Twinlock Australia has released a wrist support which it claims will make working at a keyboard more comfortable. The support can be attached to any table or workstation, and has adjustable brackets. For details: (03) 584 4000.



FINALIST

SOFTWARE
PRODUCT
OF THE YEAR
1985

your
computer MAGAZINE

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Byte, May 1984.

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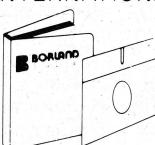
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NEW PLAYERS IN THE GAME

These are stirring times in Britain for anyone involved in home computers. As the dust settles over the pre-Christmas sales drives, when over 70 per cent of total production is sold, the message is clear that UK manufacturers, who for the last three years have had things pretty much their own way, will have to try harder to hang on to their profits and beat off the threat of imported machines.

In the UK, the home computers which made the best showing during 1984 were Sinclair, Acorn and Commodore. But a new maker, Amstrad, has done well with its CPC 464, a value-for-money, everything-in-the-box machine designed in Britain and assembled in the Far East. Amstrad made its reputation with cheap but solid audio equipment and its home computer has that air of good packaging and high reliability which is characteristically Japanese.

So far the Japanese MSX machines, which bring the 'personal hi-fi' look to computers, have not got off to a good start here. The reason is their pricing has been wrong. But now prices are starting to fall, with Mitsubishi, Toshiba and Goldstar all cutting retail prices. How they can do this when sterling has sunk to an all-time low of \$US1.10 merely illustrates the kind of profit margin there is in electronics products.

Though the MSX standard has been criticised by UK manufacturers as 'too little, too late' it is nevertheless expected to be a 'grower'. MSX is not technically innovative, but the joint effort put into making the specification functionally compatible across a variety of manufacturers' products will surely turn out to be worthwhile in the long term. When the clever peripherals like music, video, graphics and TV controllers start to appear in quantity, MSX may prove to be irresistible, especially for the customer who just wants to take the product out of the box and start using it. There are plenty such customers, and it is they who have put the Amstrad in among the best sellers.

TRAMIEL SHOWS HIS STYLE

The unwelcome signs of real competition from the Far East are not the only threat to Sinclair and Acorn. Commodore and Atari, their traditional Stateside competitors, are in the throes of a giant grudge match and the UK, as one of the most thriving sales markets, is high on both companies' lists of priorities. A recent putsch at Commodore saw the boss, Jack Tramiel, ousted from the top job. Tramiel is a born fighter and has been knocked down several times before. True to his formidable reputation, he got up off the floor, bought out the ailing Atari group from Warner Brothers and instantly set about the drastic reorganisation which had made him hated and feared by his opponents.

He fired 75 per cent of Atari's staff and drew up a complete program of new model launches for 1985. Just before Christmas he paid a flying visit to London to announce these new products and the audacity, scope and scale of his plans was breathtaking. Looking very like Marlon Brando playing the Godfather, Tramiel has, despite his short stature, enormous physical presence and the way he handled some surprisingly aggressive questioning by reporters was masterly.

Though Tramiel's policy is to cut unnecessary expenditure to the bone, he is not afraid to spend money in the cause of efficiency either – when he was at Commodore, the 64 model reputedly cost as little as \$US16 to manufacture. He will have a new factory built, probably in the state of Nevada where taxes are more favourable. Tramiel reckons he can now get computers built more cheaply in the US than in the Far East.

DIMINISHING RETURNS CAUSE PRICE CUTS

Whatever his secret is, British manufacturers would like to know it. If Tramiel's Atari delivers what is promised, then the Brits as well as Commodore could be in for a very rough ride. For one

of the biggest problems with the UK breed of home computer is its excessive price of manufacture.

Acorn is still selling its BBC Micro, still with its puny 32 Kbytes of RAM, at the hefty price of 399 pounds. The BBC Micro is officially approved for purchase by schools and since 1981 Acorn has made a good living selling this machine. But cuts in educational budgets could hit sales of this computer, and in the meantime Acorn has had to cut the price of its consumer home computer, the Electron, by a whopping 35 per cent. Acorn, which went public last year, has seen its stock market valuation slump from a high of 218 million pounds a year ago to a low of 55 million pounds, prompting Acorn boss Chris Curry to lash out at "an orchestrated campaign to run down the British computer industry in general and Acorn Computer in particular."

Even Sinclair has not been immune. Sinclair did well over the Christmas period, not least because there is so much games software available for the mainstay of the range, the Spectrum. Home computers are increasingly being sold simply as games machines – parents have seen through the rhetoric of the home computer as an educational device. But this does mean there must be a price ceiling. A games machine should cost significantly less than a video recorder.

Growth in the UK market has fallen from its peak of over 100 per cent in 1983 and is predicted to fall to less than one-third of that. The spectre of over-capacity lurks in the wings. Hence Sinclair, like Acorn and Commodore, has been obliged to cut the price of the Spectrum Plus for 1985. In the meantime, the Sinclair QL, a year after its launch, has still not gathered the software base which has made the Spectrum such a runaway success. Critics blame the decision to stay with Sinclair's unique microdrives rather than offering Sony-type 9 cm microfloppies.

Sir Clive has been personally visible over the Christmas period. He has at last launched his pet project, the C5 electric 'car' – a sort of fibreglass bathchair, powered by an electric motor from a washing machine, which

will be serviced by Hoover agents. Power output is so puny the three-wheeled device must be supplied with pedals to make it uphill. With the whole thing weighing in at 54 kg and a range between recharging stops of only 64 km, wouldn't you be better off with a regular pushbike, asked the critics? The whole first production run of several thousand has, however, been snapped up – most of them, it seems, by holiday camps.

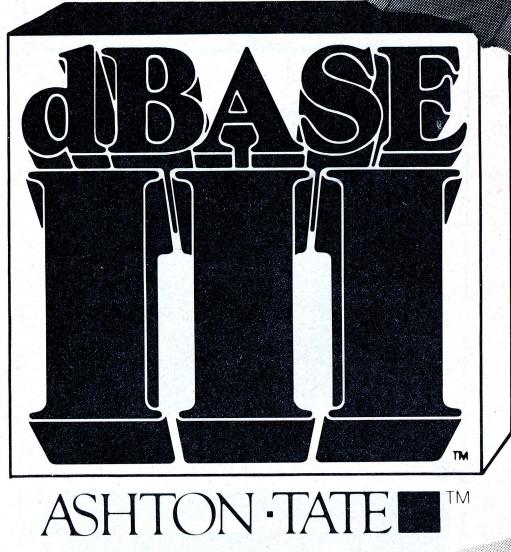
FISTS FLY IN HOME COMPUTER WARS

On a personal note, Sir Clive was lately divorced from his wife Ann, who until recently was a named director of Sinclair Research. Perhaps the strain was telling when, in an incident in a pub in Cambridge, Sir Clive came to blows with Acorn boss Chris Curry. The two men know each other well, of course – Chris used to be Clive's right-hand man in the days of Sinclair Radionics before he left to set up Acorn.

Apparently the fracas ensued when Sir Clive strode into the bar of the Baron of Beef public house in Bridge Street, where Curry was entertaining his staff to a few pre-Christmas drinks. Sinclair was brandishing an Acorn poster which contained the implication that Sinclair's home computers were less reliable than Acorn's. Since the respective firms' Christmas advertising campaigns are both estimated to have cost around 4.5 million pounds, quite a lot of earnings were riding on the publicity material.

An unseemly brawl ensued in which Sinclair lashed his former lieutenant around the head with a rolled-up copy of the offending poster in front of his astonished colleagues. Heated discussions continued later in the evening in one of Cambridge's less salubrious watering holes. It appears the two men, honour satisfied, have now made up their differences and are closer once again. Computing does have its lighter moments. □

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Personal Computer of the Year

AND THE WINNER IS ...

BY LES BELL

Hewlett-Packard's HP 110 is the 1985 Personal Computer Of The Year, the worthy winner of a tough battle against eight machines our judges considered the cream of the past year's releases.

It knocked out six of the best in the finals before taking on the Apple Macintosh – little brother to the then-reigning PCOTY champ, the Lisa – and Olivetti's hotshot IBM-beater, the M24, in the ultimate showdown.

The Mac, carrying much of the innovative technology which won Lisa its title, and the M24 – one of the few high-speed IBM-beaters which is truly compatible – made it a hard decision all the way.

But in the end it was Hewlett-Packard's day; it was the class portable of a year in which portables 'arrived'. As the Award specifies, it was the machine which represented the greatest step forward in the state of the art ...

The Long Road To Victory

Deciding on a winner in each Award category from such a selection of excellent products isn't easy, but the judges had to do it. The year wasn't an outstanding one for innovation; rather, it was one in which old themes were refined and made more appropriate to people's needs.

The title of Personal Computer of the Year is only one category of the Awards, as *Your Computer* recognises the equal importance of software in the use of microcomputers. Altogether the Awards comprise:

The Personal Computer Of The Year Award: awarded to the personal computer, released on the Australian market in the last calendar year, which represents the greatest step forward in the state of the art.

The Software Product Of The Year Award: awarded to the software package, released on the Australian market in the

last calendar year, which represents the greatest step forward in the state of the art.

There are also two Special Commendations:

Australian Hardware: awarded for Australian achievement in hardware design, support and marketing.

Australian Software: awarded for Australian achievement in software design, support and marketing.

It is important to recognise that the Awards and the Special Commendations serve different purposes. The main PC and software Awards are primarily decided on technical excellence, product support, utility and other criteria, with little attention paid to success in the market. This is because newly released products may only recently have appeared on the market and barely started to sell.

The Australian commendations differ in two major ways: first, they consider not products released in the last year, but machines (or software) which have achieved notable success in the last year, either commercially, or in terms of software support, upgrades, technical excellence or, in particular, export success.

Criteria for Judging

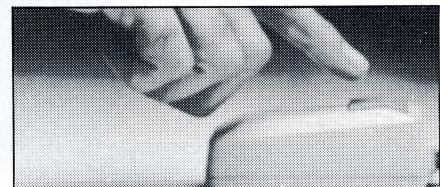
The major criteria – not in any particular order – which the panel used in judging the machines were:

- Ergonomic design, in terms of both hardware and software.
- Technical excellence in design and engineering, and provision of advanced or new features.
- User support, documentation and training.
- Value for money.
- Performance.

However, the Award panel doesn't feel constrained to consider only those criteria. With the current rate of development, a machine could be released which 'breaks all the rules', and although deserving of the Award, would not score well against the literally 'prejudiced' criteria.

The Finalists

The Personal Computer of the Year Award shortlist eventually emerged after long discussion, and the nine machines represent the cream of the year's crop. Each is a leader in its own market segment, and it was obvious that choosing a winner would be no easy task. Here is the official shortlist:



■ Apple Macintosh



■ Dick Smith Electronics Bondwell 14



■ Epson PX-8
■ Hewlett-Packard 110 ▶



■ NEC APC III

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And experts can talk in code, just the way they're used to.

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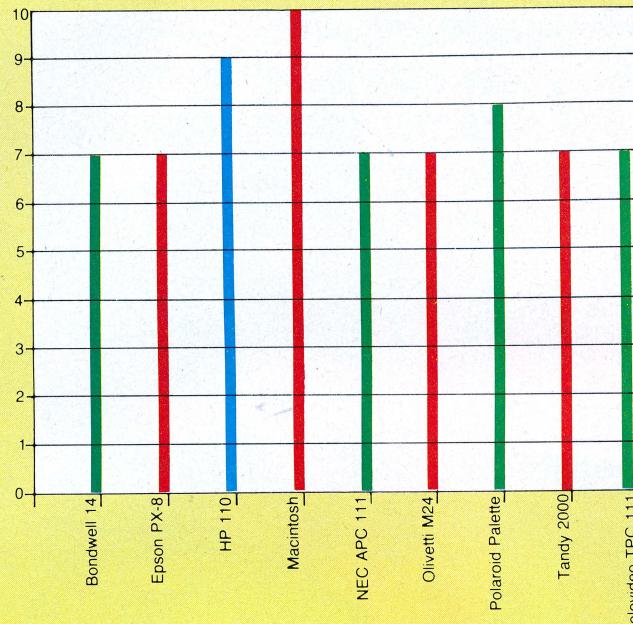
The 1985 Personal Computer Of The Year Award was a close-fought battle between a rash of new portables and a band of we-do-it-better IBM lookalikes – with two 'strays' thrown in to make it really interesting. It's fitting that a portable (one of the few areas where we saw real innovation during the year) came out on top, closely followed by a lookalike and a stray ...



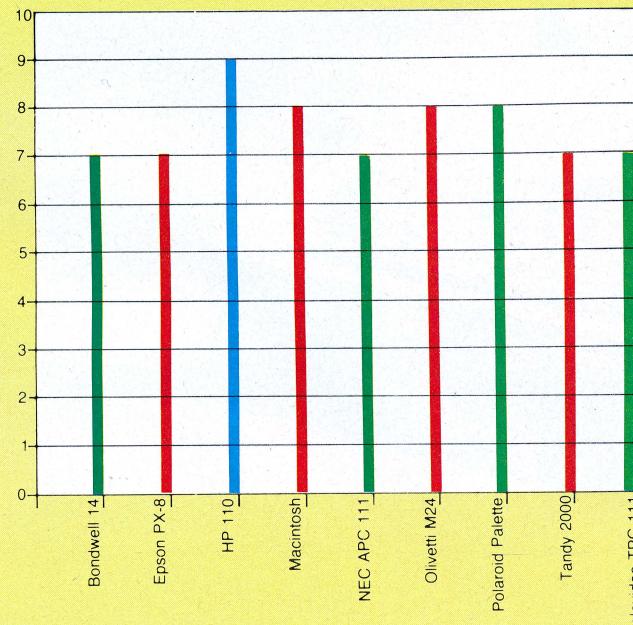
COMPARISONS

As you can see from these graphed comparisons, the competition for Personal Computer of the Year was tough. All products rated well on the panel's scale, but the HP 110 stands out overall.

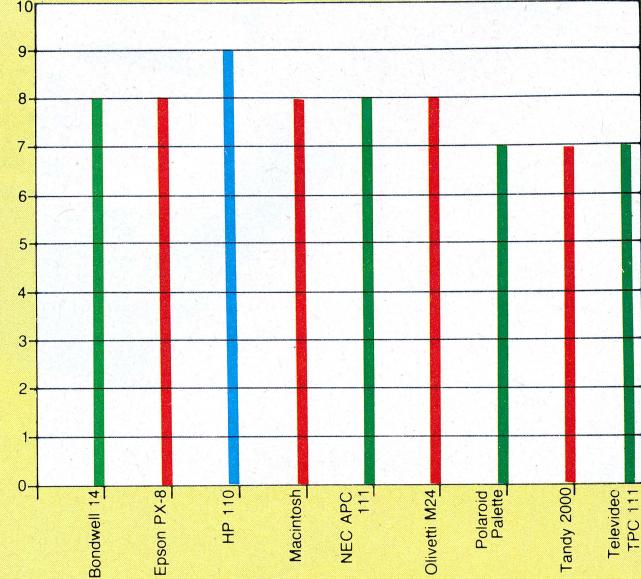
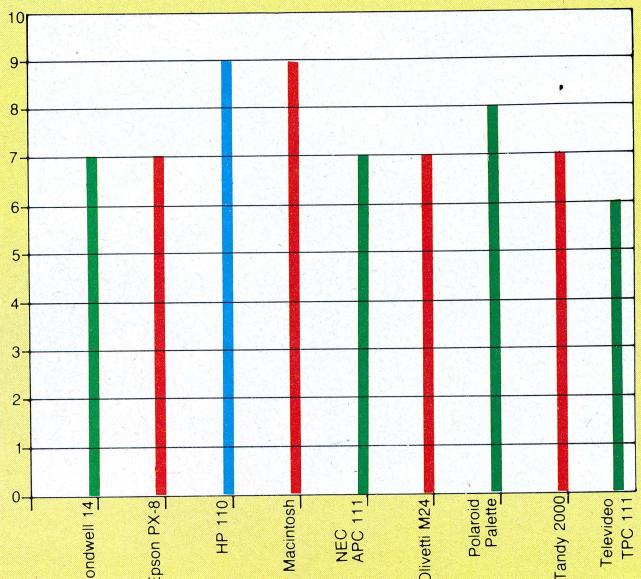
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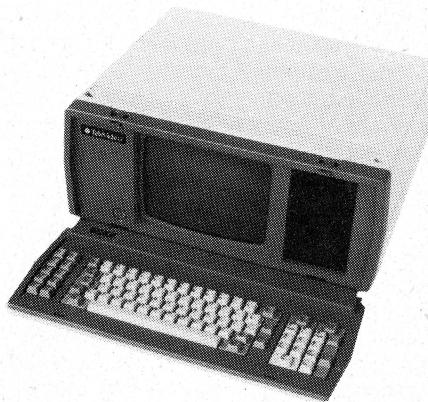
▲ EASE OF USE FUNCTIONALITY ▶



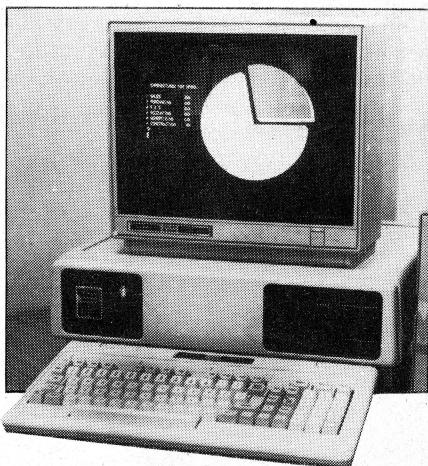
▲ SUPPORT VALUE FOR MONEY ▶



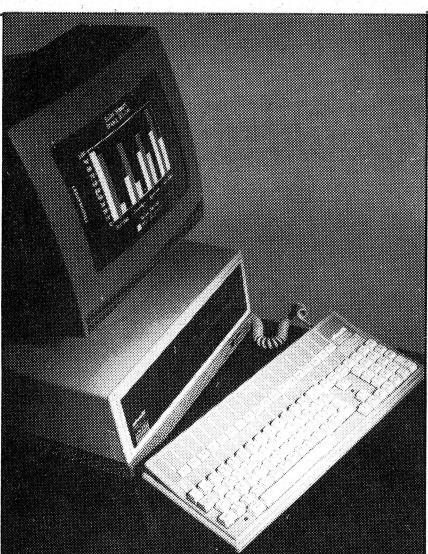
Personal Computer of the Year



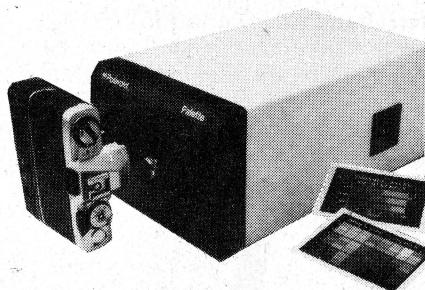
■ Televideo TPC II



■ Tandy TRS-80 Model 2000



■ Olivetti M24



■ Polaroid Palette

The panel extended the Personal Computer of the Year category slightly in order to include the Polaroid Palette, which is an innovative system for the preparation of presentation slides using a PC. Although strictly speaking a peripheral, it's a piece of computer hardware attaining high scores in all the criteria the judges applied, and so seemed worthy of inclusion.

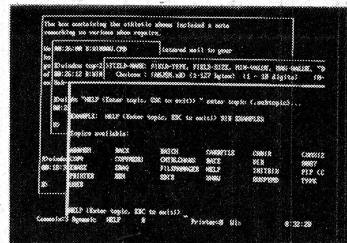
Three machines soon emerged as the leaders: the Macintosh, the HP 110 and the M24. The Macintosh is great fun, but nowhere near as advanced as the Lisa; already programs similar to MacPaint are running on a number of machines. The M24 is probably our choice for the best PC clone on the market; it's smooth, fast, reliable and runs all the software you'll need.

But in the end, it was the Hewlett-Packard HP 110 that won the judges' approval. It's extremely civilised – nice to use, with innovative packaging and features. It's a pleasure to operate, since being portable it's available wherever required. We know other portables are on the way which have similar features – but they're not yet available, and so we haven't been able to stack them up against the 110. We suspect the 110 will hold its own for some time to come, simply because of its quality, Hewlett-Packard's support and the quality of the software supplied with it.

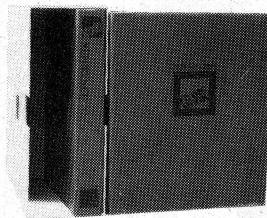
Congratulations, Hewlett-Packard!

In examining the software market, the Panel had similar problems choosing between outstanding products. A lot of software appeared on the market in the last year, much of it excellent, and much of it evolutionary rather than revolutionary. Much of the integrated software, for example, is based on previous experience with spreadsheets, although user interface technology is obviously much improved.

Here is the Software Product of the Year shortlist:



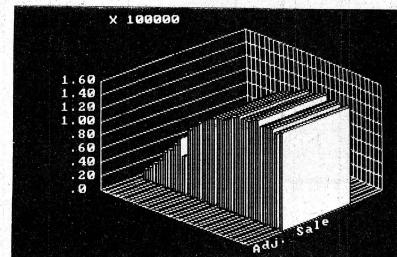
■ Digital Research Concurrent CP/M



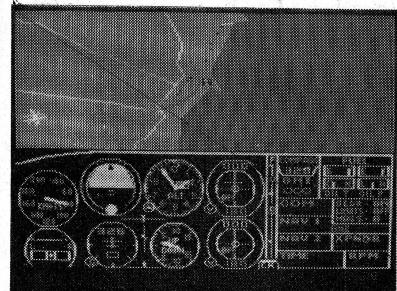
■ Ashton Tate Framework



■ Lotus Corporation Symphony



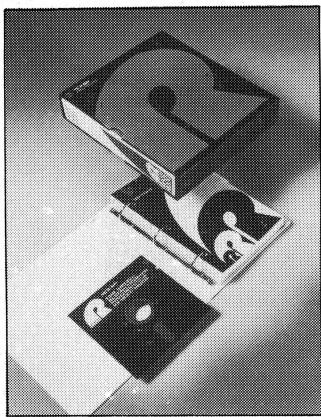
■ Software Products International Open Access



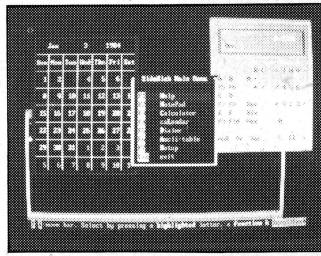
■ Microsoft Flight Simulator II

►

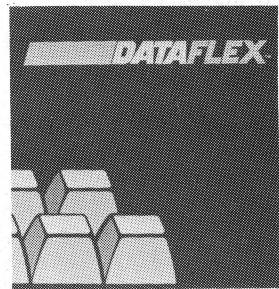
Personal Computer of the Year



■ Microrim R:Base



■ Borland International Sidekick



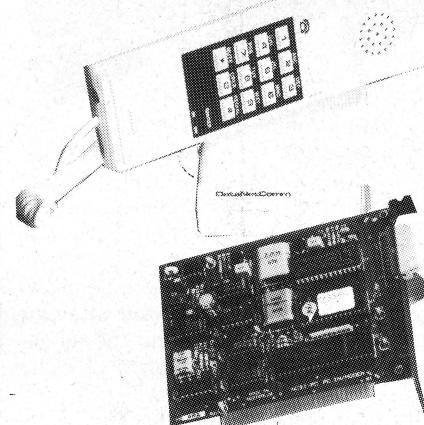
■ Data Access Corporation Dataflex 2.0

This was a tough one. Eventually, the panel had reduced it to a standoff between two packages: Sidekick and Flight Simulator II. We loved them both: Sidekick's pop-up windows are just so convenient, it packs a tremendous amount of useful software into a small package and it's fun to use – but Flight Simulator II is a programming *tour de force* which even swayed those of us who are normally unimpressed by games. We've spent hours flying around New York when we should have been programming.

In the end, the Award went to Microsoft for Flight Simulator II, for the hours of pleasure it affords as well as its outstanding programming.

Australian Commendations

Having prepared the main Award shortlists, the panel then turned its attention to Australian manufacturers. In the panellists' opinions, three hardware products stood out during the year:



■ DataNetComm In/Modem



■ Labtam 3003

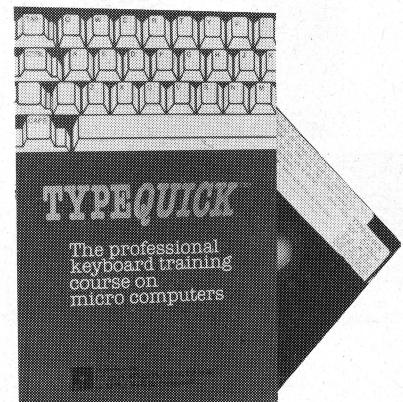


■ Portable Computer Company Portapak

In looking at the Special Commendation for Australian Hardware, the panel was very aware that the shortlisted products varied enormously in capability and application, and the judges took some time over this one.

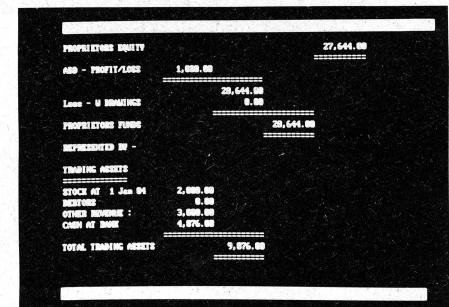
The Labtam displays very advanced technology and excellent value for money, and the Portapak offers very high performance and features for a portable machine, but it was the DataNetComm In/Modem which really fired the panellists' imaginations. Considering the number of IBM PCs and compatibles at present installed, and the number of applications which will rely on communications, this modem card is certainly bound for success.

Three software packages were considered for the Special Commendation for Australian Software:



■ AID Systems Typequick

■ Hi-Tech Software C Compiler



■ Magnabiz

In the end, after much deliberation, the judges plumped for Typequick as having the broadest application, particularly in overseas markets. In particular, Typequick has scored a recent success in being distributed by IBM.



Why the Awards?

The Your Computer PCOTY was the world's first Personal Computer of the Year Award, and in its three-year history it has achieved an enviable reputation for independence and integrity. Through the appointment of an independent panel of experts, who are knowledgeable users yet exempt from commercial pressures in their work, the Awards are guaranteed to be unbiased and based purely on merit.

The Awards have two fundamental purposes, in keeping with their two major audiences.

For the magazine's readers – the public at large – the computer industry is becoming more and more visible. There is increasing marketing activity, increasing competition for the consumer's attention, and this – coupled with the increasing complexity of the computers themselves – means that it is more and more difficult for the prospective purchaser to decide what, if anything, to buy.

Therefore, the fundamental rationale of the Awards is to draw attention to worthwhile products; those products released in the last year that offer new features, improved quality or other enhancements. The independent assessment of the Award panel means that even products which have minimal promotional backing can stand out simply on the basis of their performance.

The second audience for the Awards is the industry itself, of which we are a part. It is important for the industry to recognise outstanding achievement, and it is important for achievers to feel they are encouraged and supported by their peers.

This factor is, we feel, especially vital in the case of the Special Commendations for Australian achievement. Australia has the beginnings of a successful computer industry, one that is starting to achieve success in overseas markets. It must be encouraged.

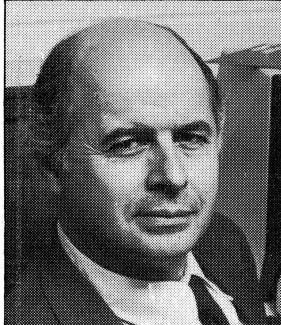
The Panel

Selecting the winners is not a trivial undertaking, and so we set out to ensure that our own personal foibles and preferences could not influence the decision. We did this by selecting a panel of judges who are both experienced and independent. Most people in the industry who have the requisite experience tend to work for one of the computer companies and would obviously be unsuitable.

As in previous years, the panel comprised five members:



Dr Robert Graham is head of the Department of Finance at the New South Wales Institute of Technology, and is a leading expert on the use of personal computers in a corporate environment. He has been involved with personal computers since the late Seventies, and lectures widely on personal computer software.



Phillip Grouse, formerly Professor of Information Systems at the University of New South Wales and now an independent software developer, has long experience with microcomputers, including the design of a multi-user Z80 system in 1979. The author of a number of computer science texts, he maintains a keen interest in personal computing and often pops up on local public access bulletin board systems. ▶

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HUSKY 80 super silent printer w/-interface	\$299
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1541 FLASH '85 version loads all programs	\$149
FLASH '85 with built-in ON/OFF switch	\$159
CSM 1541 Disk Align Program for the 1541 drive	\$69
64 DOCTOR	Disk \$42, Tape \$39
RABBIT (busts copy protect loads tape fast as disk)	\$75
ARROW (C64/VIC-20) faster still. With built-in ML monitor	\$79
GENEALOGY PROGRAM (664 names, 6 different printouts)	\$85
MIND PROBER (also IBM, Apple)	\$49
PROTEK Acoustic Modem 1200/1200, 1200/75	\$150
MAE 64 Macro/Assembler	\$85
VIC-TREE for programmers	VIC \$119, C64 \$149
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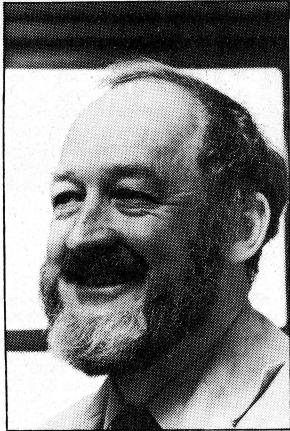
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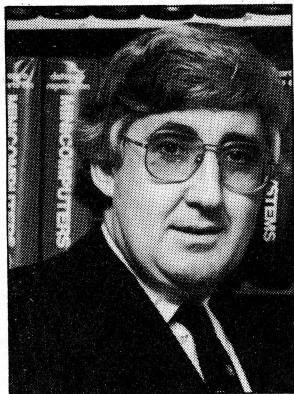
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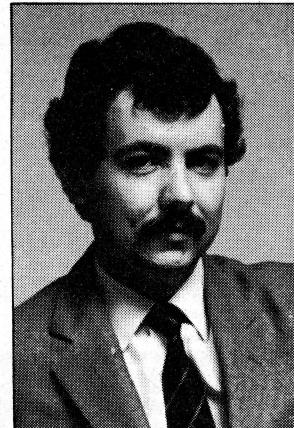
Personal Computer of the Year



Dr John Barrett is a lecturer in the School of Education at Macquarie University and regularly writes on education for *Your Computer*. He first came into contact with computers at the University of Oregon in 1969 and has been working with micros for several years.



Len Rust is the managing director in Australia of International Data Corporation, a major US marketing consultancy company specialising in the data processing and communications industries. Part of IDC's brief is to continuously monitor the microcomputer market in Australia, and for some years it has been releasing total industry sales figures and forecasts.



Les Bell, managing director of Les Bell

and Associates and Consulting Editor to *Your Computer* magazine, has been writing about, building, programming and using microcomputers and personal computers since 1975. He has lectured all around Australia on personal computers and related topics and is acknowledged as an expert in this field.

The members of the panel have between them something over forty years' experience with personal or microcomputers, and should have at least some idea of what makes a good personal computer. They also have almost one hundred years' experience with computers generally!

Subjective Factors Included

Because we have found that attempts to reduce the selection of the winner to a purely objective, number-crunching exercise usually produce slightly skewed results, the panel takes into account various subjective factors. What it boils down to is this: given the opportunity to buy new computers every year, these are the computers the panel would buy.

As in previous years, the panel met initially to review the products released during the last year. It is worth pointing out that to relieve the panel members of undue pressure to select certain products, manufacturers or distributors are not invited to nominate themselves (or each other) for consideration. The panel members are all very active in the industry and know the major products which are released, so they draw up the shortlist in committee. Only at this stage are the finalist companies advised.

From the hardware viewpoint, the last year has been decidedly unspectacular, with little innovation. In part, this is due to IBM's continued strong grip on the marketplace; while most industry commentators estimated that IBM would ship 6000-8000 machines last year, our latest information indicates that the true figure is nearer 30,000 (since IBM never releases its sales figures, we can't be sure).

It is clear that purchasers are satisfied with a tried and true hardware formula which gives them access to a free and open software market - a formula which the IBM and compatibles fit to a tee. Commercial recognition of this means that most machines released last year were compatibles and therefore mostly

outside the scope of the Awards. In the words of one observer, "The industry has discovered a large object (IBM) and gone into orbit around it." He went on to observe that some large objects are black holes.

In reviewing the machines released in the last year, the Award panel came to the conclusion that none of them was truly revolutionary in the same way as last year's winner, the Lisa. Rather, they were evolutionary, representing refinements of existing technologies and concepts. For example, the Macintosh evolved from the Lisa; Lisa users may describe it as a backward step, but there can be no doubt that the revolutionary production engineering behind the Macintosh has made the Lisa-style windows and mouse-driven software available to more users.

Similarly, many other machines considered by the panel are really refinements of existing designs, such as the Olivetti/AT&T M24, which is based on IBM PC architecture; the Bondwell 14, which takes the Osborne-style transportable concept somewhat further; and the Epson PX-8 and Hewlett-Packard 110, which represent a new breed of lap machines.

By the time the panel, over lunch, had reached the stage of agreeing on a shortlist, the restaurant which it had commandeered wanted to re-open to the public for dinner, so an agreement was reached to reconvene in two weeks, by which time we would have obtained all the shortlisted products for review.

On the appointed date, the panel members squeezed into an office that turned out to be extremely cramped after the systems had been set up and the software installed. There followed a morning of fierce debate, intense investigation of products, another long lunch, more investigation and finally, that highly desirable state, consensus.

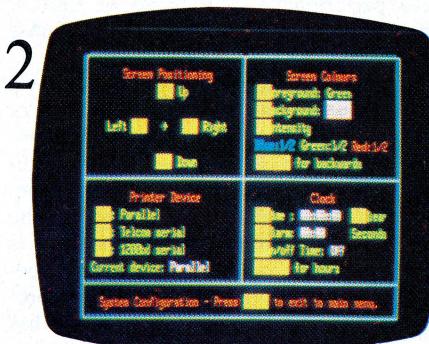
And so we had our winners: the Personal Computer of the Year is the HP 110 portable computer; Microsoft's Flight Simulator II is the Software Product of the Year; and the two Australian Special Commendations are awarded to DataNet-Comm's In/Modem and AID Systems' Typequick. On the following pages you'll find detailed descriptions of all the shortlisted products, both hardware and software, so you can judge for yourself which of these excellent products would best fill your particular needs. □

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HEWLETT-PACKARD'S HP 110

In last year's award shortlist, we examined a number of portable computers, and were impressed by the potential of these lap machines. One immediate problem we saw with them was the absence of any standard operating system, requiring software to be specially written. This year, we have seen the entry of new machines which use industry-standard operating systems and are considerably more powerful. The cream of the crop is Hewlett-Packard's new lap machine, the HP 110.

The 110 is truly lap-sized at only 330 by 250 by 73 mm and weighing just 4.1 kg. Most of the weight can be attributed to the sealed lead-acid battery which powers the 110; nicads were considered but rejected as not providing operation for long enough periods between recharges.

Two flat sliders on the front of the machine release the display, which tilts up, revealing the keyboard underneath. We found the tilt mechanism a little stiff and awkward to use, but then it has to be to allow the display to tilt to the right angle and then stay there.

The keyboard has 76 sculpted keys, which covers a full QWERTY keyboard, eight function keys and some miscellaneous keys such as 'SELECT', which is used to select items on menus. The keys have a comfortable feel and would be suitable for high-speed use.

The display is, as you would expect, a liquid crystal type. Two versions are available, with 80 by 12 or 80 by 16 characters respectively. Not only is the display a full alphanumeric type, it is also dot addressable, with a resolution of 480 by 128. LCDs have certainly advanced dramatically in the last couple of years.

Innards

Inside the machine is an amazing display of technical wizardry. The processor is an 80C86, a CMOS (complementary metal oxide semiconductor) version of the 8086 processor which consumes much less

power. It runs at 5.33 MHz clock speed, which is just under 12 per cent faster than an IBM PC, and of course the actual performance is faster still since it fetches 16 bits at a time, as against the eight bits of the IBM.

This of course gives rise to very impressive performance. The Sieve of Eratosthenes benchmark runs in 1260.92 against the IBM's 1953.53 – 54 per cent faster!

Turning our attention to memory, we discover that the 110 has 272 Kbytes of RAM. It is important for a portable machine to have plenty of memory, particularly since one may go for extended periods without being able to transfer the contents of memory to disk. The user is able to partition the 110's memory between main memory – that is, where programs load and run – and pseudo disk drive, where files are stored. The 110 is particularly forgiving in that it will not allow the user to reduce the size of the disk space below that required to hold the current set of files – in order to reduce it further one must erase files first.

The 110 also has 384 Kbytes of ROM, a very considerable amount for this kind of computer. The reason is that it stores not only the operating system, but also a complete implementation of Lotus 1-2-3. This indicates the major market segment Hewlett-Packard is targeting with the machine: corporate executives, who are, presumably, always on the move.

At the back of the machine are the ports which interface it to the outside world:

there's an RS232C port with a non-standard 9-pin connector, and two connectors for the Hewlett-Packard Interface Loop, a small and simple local area network for battery-operated equipment which first made its appearance on the HP-41 family of calculators. Expansion through the Interface Loop is very simple; the connectors are polarised so that they cannot be inserted wrongly and all you have to do is wire each peripheral to the next to complete the loop. Perhaps the first peripheral selected by most users will be the HP Thinkjet printer which, like the 110, is battery operated. This provides very good print quality – provided you use the right paper – and is quick and above all silent. Another important peripheral is the 9114 floppy disk drive, which accepts 9 cm disks with a capacity of just under 800 Kbytes. Much of the software for the 110 will be available in this format, so heavy users who want to go beyond Lotus will need it.

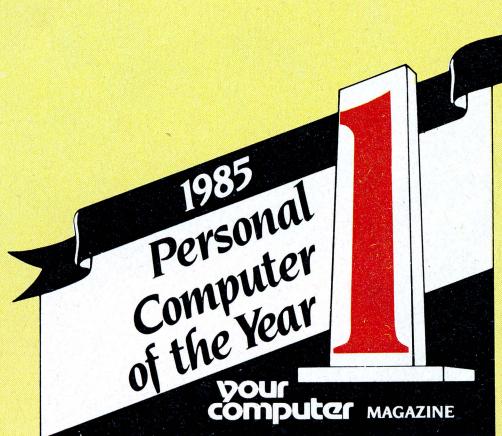
Standard Software

The HP 110 runs MS-DOS 2.1, giving it access to a fair range of software – WordStar, dBase, Condor and other generic MS-DOS programs. It's not compatible with the IBM PC, however, shutting out a number of significant programs – of which Lotus 1-2-3 is probably the most notable, but which has already been nicely taken care of.

The 110 is, however, compatible with the earlier HP-150, and can run most of the software adapted for that machine. For example, in deriving our benchmark timings, we used the HP-150 version of BASIC-86. It's interesting to note that the 110 does not come with BASIC in ROM; the notion that users will do their own programming in BASIC has now well and truly flown out the window.

However, there is a lot of software in that ROM. As mentioned above, there's a complete implementation of Lotus 1-2-3, with full help screens, graphics, everything. The ability to place models onto a portable machine which can be taken unobtrusively into meetings is of high value to many users.

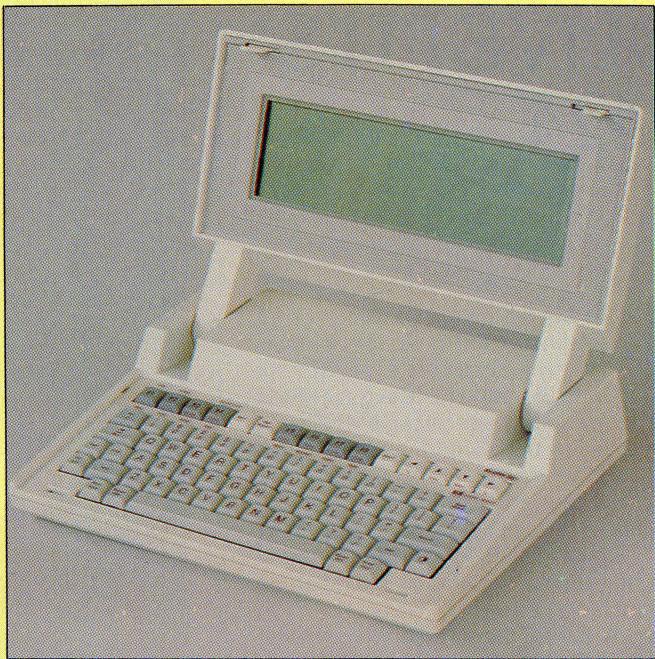
Also in the ROM is HP's Personal Applications Manager, a menu-driven 'shell' for



SPECIFICATIONS

HP 110

Made By:	Hewlett-Packard
Processor:	80C86
Clock Speed:	5.33 MHz
RAM:	272 Kbyte CMOS static RAM
ROM:	384 Kbyte CMOS ROM
I/O:	Hewlett-Packard Interface Loop and Serial Interface (RS232)
Languages:	Runs MS-DOS languages
Keyboard:	75 keys including eight special function keys
Display:	16 lines x 80 column LCD
Graphics:	128 x 480 pixel, bit-mapped graphics
Peripherals:	ThinkJet printer, disk drive
Expansion:	9 cm micro floppy disk drive
Best points:	Long battery life
Worst points:	
Extras included:	Vinyl carrying case
Options:	9 cm micro floppy disk drive, ThinkJet printer
Price:	\$4834.24
Review unit from:	Hewlett-Packard Australia Pty Ltd, 17-23 Talavera Road, North Ryde 2113; (02) 888 4444.



DOS. PAM reads a simple menu file on each disk and displays a menu of applications, together with certain ancillary functions – like switching off, for example (incidentally, the 110 switches itself off in any case). Another interesting feature of the PAM display is the battery charge indicator, which shows percentage of full charge, rather than simply alerting you ten minutes before dying.

The 110's word processor is Memomaker, a simple word processor which is logically organised and can do everything a user on the move is likely to require. For those with more demanding requirements, WordStar can be used.

Also in the 110's capacious ROM is a communications utility which provides terminal emulation as well as file transfer.

To match this there is a series of set-up menus which allow you to configure the machine for baud rate, communications ports, RAM drive size, power-off delay and so on.

All in all, the software is quite civilised and easy to use, and much simpler than the hieroglyphic command lines required by the MODE command provided by DOS, for example.

Performance

The 110's performance is excellent. Heavy Lotus users, for example, who build large models, regularly complain of long recalculation times, and probably would not accept any further delays even when traded for portability. The good news is that the 110 is faster than the IBM PC; as

mentioned above, on our standard Sieve of Eratosthenes benchmark it came out 54 per cent faster. Part of this superiority is due to differences in the BASICs used, but Lotus users can expect recalculation to be at least 12 per cent faster.

Innovations

The HP 110 is a solidly innovative computer – more so than the other machines we examined. It breaks new ground for portable computers in battery life, memory capacity, and processor performance. Part of its appeal is also the Hewlett-Packard attention to detail, coupled with an almost indefinable engineering elegance – details like the battery condition display clearly show that this machine has been well thought out. □

OLIVETTI'S M24

It's human nature to want to own the best of anything; for example, we buy a car simply to get us from A to B, but still there's a good market for sports cars capable of getting us a speeding ticket without visible strain. Likewise, we buy an IBM-compatible PC to get access to all that software, but regardless of whether we really need it or not, it's nice to have something a bit more powerful than a straight PC. The M24 fits this category perfectly.

Firstly, the M24 has a somewhat smaller footprint than the IBM PC, and its dimensions are generally smaller. When desk space is at a premium this is important.

Internally, the construction of the M24 is quite different from the PC. Most of the electronics is on a motherboard on the underside of the unit, while a motherboard on the top side accepts expansion cards. The main circuit board carries the processor, up to 640 Kbytes of memory (using 256 Kbit RAM chips), disk controller, serial port and parallel port. One slot is required for the video controller – either monochrome or colour – and all the rest are free.

The other major difference from the PC is the M24's processor. Based on an 8086



In a year of refinement, the Olivetti M24 is one of the most refined machines in the IBM compatibles stable. Marketed in the US by AT&T as the 6300, the M24 was designed by Olivetti to be as compatible as possible with the IBM PC, yet offer significant performance improvements.

SPECIFICATIONS

OLIVETTI M24

Made By: Olivetti
Processor: 8086
Clock Speed: 8 MHz
RAM: 128 Kbytes expandable to 640 Kbytes
ROM: 16 Kbytes with power-on diagnostics and bootstrap
I/O: 1 serial, 1 parallel
Languages: Heaps – all MS-DOS and CP/M, and so on.
Keyboard: Numeric and cursor keypads, 10 programmable function keys
Display: 30 cm colour screen
Graphics: 640 x 400 resolution

Peripherals:
Expansion: Memory, graphics boards, extra comms port, Omnimet/Ethernet Boards
Best points: Speed, design, IBM compatibility
Worst points: Large monitor
Extras included:
Options:
Price: \$5318 retail + tax for 256 Kbyte machine
Review unit from: Olivetti Australia Pty Ltd, 140 William Street, Sydney 2000; (02) 358 2655.

processor with a clock speed of 8 MHz, the M24 is over twice as fast as the IBM machine. Now speed isn't everything, but your favourite word processor will feel so much nicer to use, as scrolling and screen updates will be faster. In fact, our benchmarks revealed the Olivetti machine to be 2.19 times faster than the IBM, using the Sieve of Eratosthenes benchmark.

Because the 8086 is a 16-bit processor, the M24 can access 16-bit peripheral cards. But how, I hear you cry, if it is IBM-compatible, because the IBM has an 8-bit bus? The answer is that the connectors inside the M24 are the same as those on the PC, and you can plug in cards in the usual way. However, the M24 also has another set of connectors at the front of the motherboard, which carry the remaining eight bits of the M24's 16-bit bus. Of course, only Olivetti expansion cards use this at present, but it gives the best of both worlds.

Other Options

The M24 offers the user a number of other options. Two keyboards are available, one with the same layout as the IBM PC (but with lock indicating lights), and the other having more keys and being more suitable for heavy word processing use.

Another ingenious add-on is Olivetti's mouse, which works with virtually any software, since it emulates presses on the cursor and function keys.

Various disk configurations are available. Our evaluation model had two 360 Kbyte slimline disk drives, but the M24 is also available with 720 Kbyte disk drives, and of course one of the drives can be replaced by a 10 Mbyte hard disk.

Other options include an additional serial interface, dual serial interface boards, Z8000 alternative processor board (to run M20 software under PCDOS), and network interface boards for Omnitel and Ethernet.

One minor complaint is the size of the M24's colour monitor, which dominates the machine and actually makes it bigger than the IBM PC. Another hidden gotcha is the absence of any composite colour video output from the colour card, making it impossible to interface with the Polaroid Palette.

Overall, however, we have been very impressed with the M24's performance. For those looking for a machine which can use as much software as the IBM PC, but has a little extra performance, this has to be the one. □

APPLE'S MACINTOSH

We very much doubt if there are any readers who haven't heard of the Macintosh. Since its release early last year it has sparked a heated controversy about Apple's approach to personal computer design. On one side are those who maintain IBM's approach is the only way to go, while the Macintosh supporters claim the IBM PC is a dinosaur.

The Macintosh is certainly different from the traditional approach exemplified by the IBM machine, but we can hardly call it revolutionary. Instead it is a natural evolution of the earlier Lisa, which won the Personal Computer of the Year Award last year.

There were two problems with Lisa: first, it was expensive (though that's now been fixed), and second, it didn't fit most people's impressions of what a computer should do, that is, accounting, mailing list management and other data-intensive applications. It was never meant to do those things; it's rather a machine to support professionals and 'knowledge workers', which it does excellently. Of course, an apparent shortage of software gave critics cause for alarm, while users understand virtually no other software is required.

Mac fixes these problems in a computer for the masses. It takes the Lisa software ▷



AWARDS

SPECIFICATIONS

MACINTOSH

Made By:	Apple Computer Pty Ltd
Processor:	68000 Motorola
Clock Speed:	8 MHz
RAM:	128 Kbyte or 512 Kbyte
ROM:	64 Kbytes containing bulk of operating system primitives
I/O:	2 serial
Languages:	BASIC, Pascal
Keyboard:	58 keys
Display:	23 cm screen
Graphics:	512 x 342 resolution
Peripherals:	Printer
Expansion:	Hard disk, memory, network real soon now
Best points:	Simple user interface
Worst points:	Just niggly little things
Extras included:	
Options:	Numeric keypad
Price:	\$4395 retail inc. tax for 512 Kbyte machine
Review unit from:	Apple Computer, 37 Waterloo Road, North Ryde 2113; (02) 888 5888.



technology and unbundles it in a stripped-down form for the support of third-party software. Now we have a choice of software from Apple and other suppliers, most of it nowhere near as good as the Lisa software, but at least we can have all the fun of choosing it ...

So What's New?

What is new about Mac is the application of severe production engineering methods to its design. This is a machine which is intended to be built in vast quantities at low cost, in order to compete with the Japanese. It's a strategy which is working, to Apple's credit: two factories are now producing a Mac every 27 seconds each, for two shifts every day. Observers estimate that Apple sold 380,000 Macintoshes last year.

For our evaluation, we obtained a 512K Macintosh (a 'Fat Mac') with an external disk drive and Imagewriter printer, together with a box (a *big* box – what happened to the Mac software drought?) full of software. We also had a pre-production version of the Apple modem.

There's no doubt the Mac is easy to use; in fact, it's well-nigh foolproof. We dispensed with reading manuals and simply got on with the job, but when we later went back to examine the manuals we were impressed with their thoughtful de-

sign and the provision of tutorials on disk and audio tape.

Software

When we looked at the software provided, the story was a bit different. There is a lot of software for the Mac now, and more on the way, but the quality is extremely variable. Some of the packages are unimaginative, to say the least, in their use of the Macintosh's features, and many don't make proper use of Mac facilities like windows. To sum up the situation, one can say that when Mac software is good, it is very good, and when it is bad, it's no worse than most IBM PC software. It's just disappointing that it's not better. A big Mac software review is planned for *Your Computer* shortly ...

For those who haven't played with a Mac, the first thing you'll notice is its unusual shape; it's designed to have a small footprint and achieves that very well. The next impressive factor is its high-resolution black and white screen, which emulates a desktop with disks and files on its surface. You work by manipulating these icons with a mouse, something that takes a little practice but soon becomes second nature. There are no cursor keys on the Mac.

The Mac's 9 cm disks (I object to translating generic disk sizes into metric values

– what I'm *really* talking about here is three-and-a-quarter inch disks) have a capacity of 400 Kbytes, which is more than adequate for most applications: the Mac is not intended to be a large database machine. Of course hard disks are available from third-party vendors, and Apple itself has plans in that area.

Perhaps the best selling point for the Mac is its MacPaint program, which allows the user to draw virtually anything and is so totally seductive a piece of software that it is virtually impossible not to want a Mac after using it. One can draw with a brush – of virtually any shape, and with virtually any paint pattern – or even with a spray can, and if the result is not quite right go back and edit it using FatBits.

Already a Success

There is no doubt by now that Macintosh is a success; with the formation of user groups and the entry of third-party software and hardware suppliers, the subculture which will assure the machine of a long life is now emerging.

If Macintosh had appeared on the market before Lisa, it would certainly be the Computer of the Year; but in reality the Mac is an evolution from the Lisa, with not all the changes being improvements. It's probably the most unusual machine to be released in the last year, though. □

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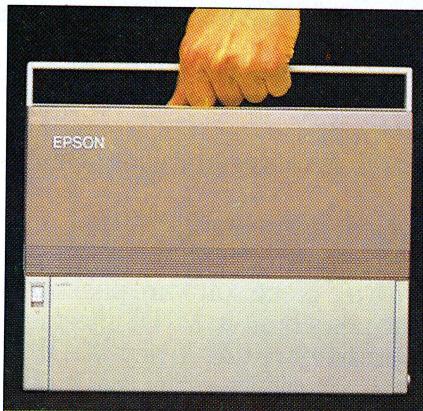
EPSON PX-8

The Epson PX-8 is a very powerful lap computer which features comparable facilities to those found on larger machines, and with its three processors offers a level of sophistication not found in many desktops.

While earlier machines such as the Kyocera family of lap computers didn't offer any kind of standard operating system, the PX-8 breaks new ground by utilising CP/M 2.2.

Despite its small size (297 by 216 by 48 mm), the PX-8 is actually based on three separate processors, a level of sophistication not attained by most desktops. The main CPU is a Z80 (actually it's probably an NSC-800, which is a CMOS processor software compatible with the Z80), which gives the machine the ability to run CP/M. A second processor (a 6301) controls the display and I/O devices, while a 7508 controls the keyboard and A/D converter.

From the outside, the PX-8 looks quite innocuous, particularly when folded up. A handle slides out to make the unit easier to carry, and a cover slides off to reveal the 72-key keyboard. Now the hinged dis-



play can be released and tilted back ready for use. The display is an 80-column by eight-line liquid crystal type, which has a graphics resolution of 480 by 64 pixels.

The machine has a basic memory of 64 Kbytes, which is allocatable between the main memory and RAM disk emulator, plus 32 Kbytes of memory containing the CP/M operating system and some utilities. The secondary processor has its own 6 Kbytes of 'video' RAM and 4 Kbytes of ROM. For those who wish to manipulate larger files than the 64 Kbytes of memory will allow, two additional RAM packs are available, with 60 or 120 Kbyte capacity.

Micro-cassette Drive

With the display folded back, the built-in micro-cassette drive is revealed. Although this is a tape mechanism, the operating system has been modified through the addition of two extra modules, the MTOS (Micro-cassette Tape Operating System) and MIOS (Micro-cassette I/O System), and treats the tape as another disk drive. Of course, it is not as fast as a real disk, and capacity is limited to twelve files on each side by virtue of the space allocation for the directory at the start of each tape, but it is treated as drive H:, allowing the use of standard CP/M commands for loading and saving files.

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